SR UNIVERSITY

AI ASSIST CODING

Lab-2.4

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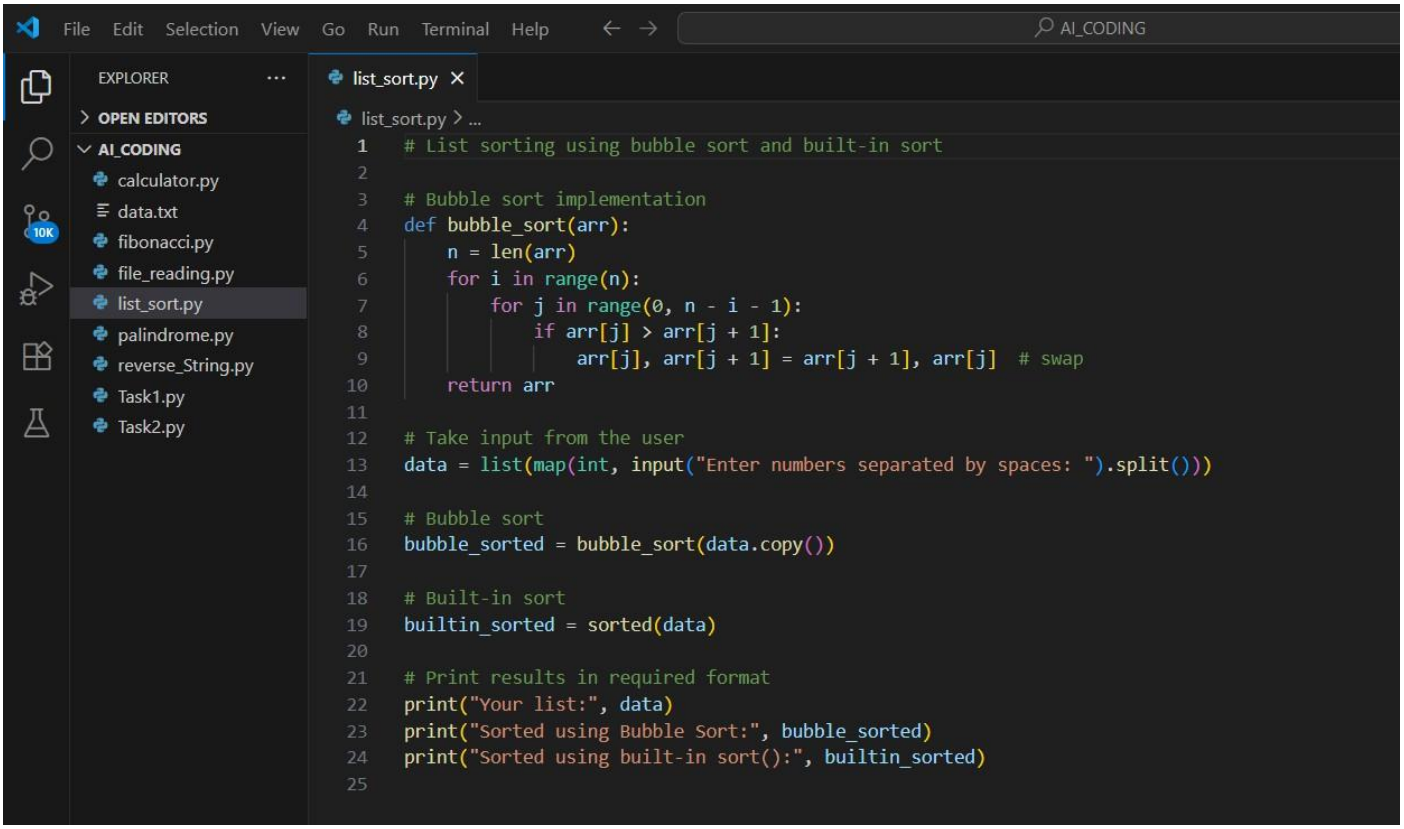
BATCH:19

TASK #1:

Prompt Used:

Open Google Colab and use Google Gemini to generate Python code that performs sorting of a list using both the bubble sort algorithm and Python's built-in sort () function. Compare the two implementations.

Code Generated:



Output After executing Code:

Observations:

- The program sorts a user-provided list using both Bubble Sort and Python's built-in sort() for comparison.

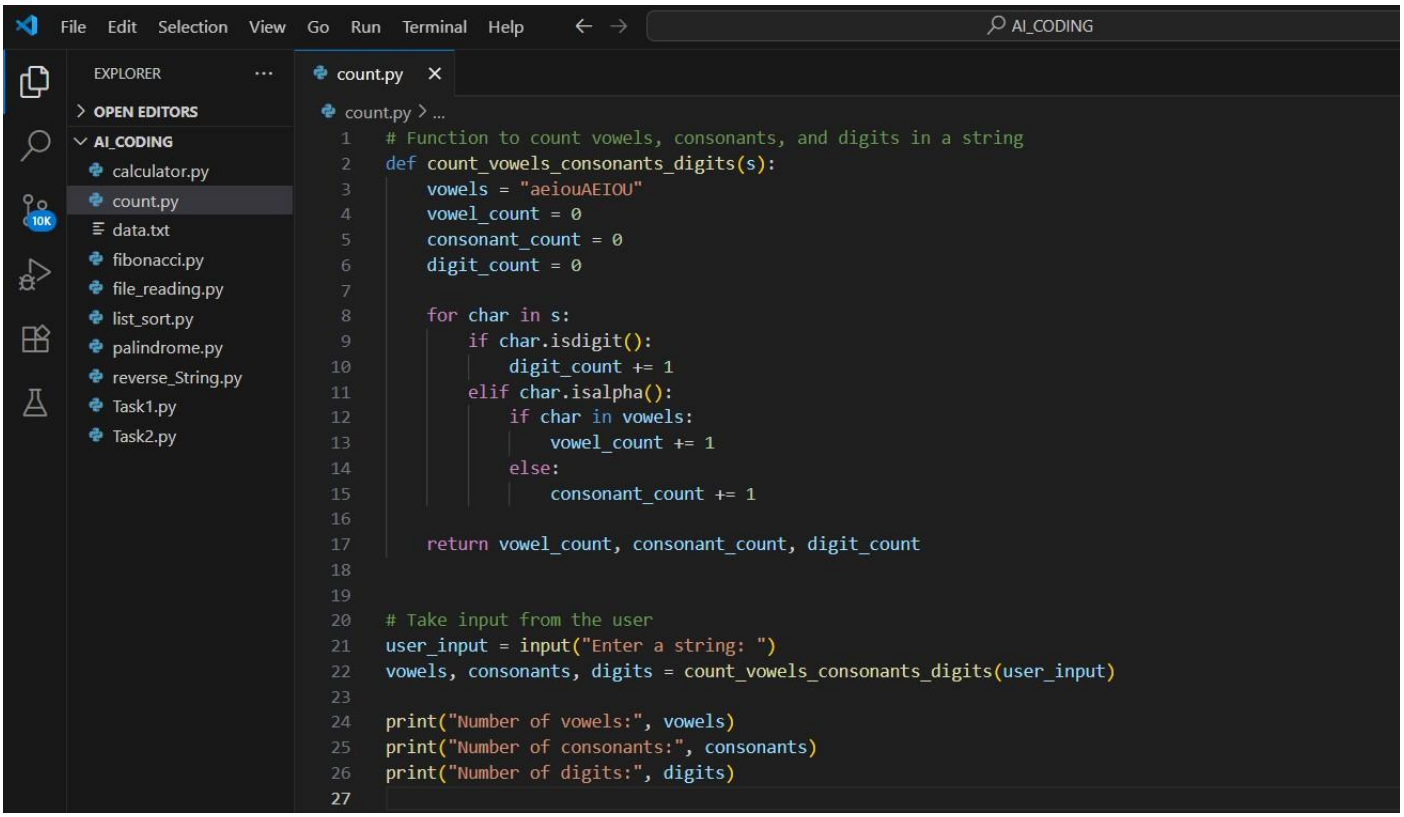
- Bubble Sort works by repeatedly swapping adjacent elements, making it easy to understand but inefficient for large lists.
- Python's built-in sort() is highly optimized and much faster than Bubble Sort.
- Both methods yield the same sorted result, but Python's built-in sort is significantly more efficient.

TASK #2:

Prompt Used:

In Colab, use Google Gemini to generate a Python function that takes a string and returns: The number of vowels, The number of consonants, The number of digits in the string.

Code Generated:



Output After executing Code:

Observations:

- The function counts vowels, consonants, and digits in a string provided by the user.
- Each character is checked: vowels are matched using a predefined set, if it is an alphabetic character but not a vowel, it is classified as a consonant, digits are detected with isdigit().
- The function uses .lower() to handle both uppercase and lowercase letters consistently.

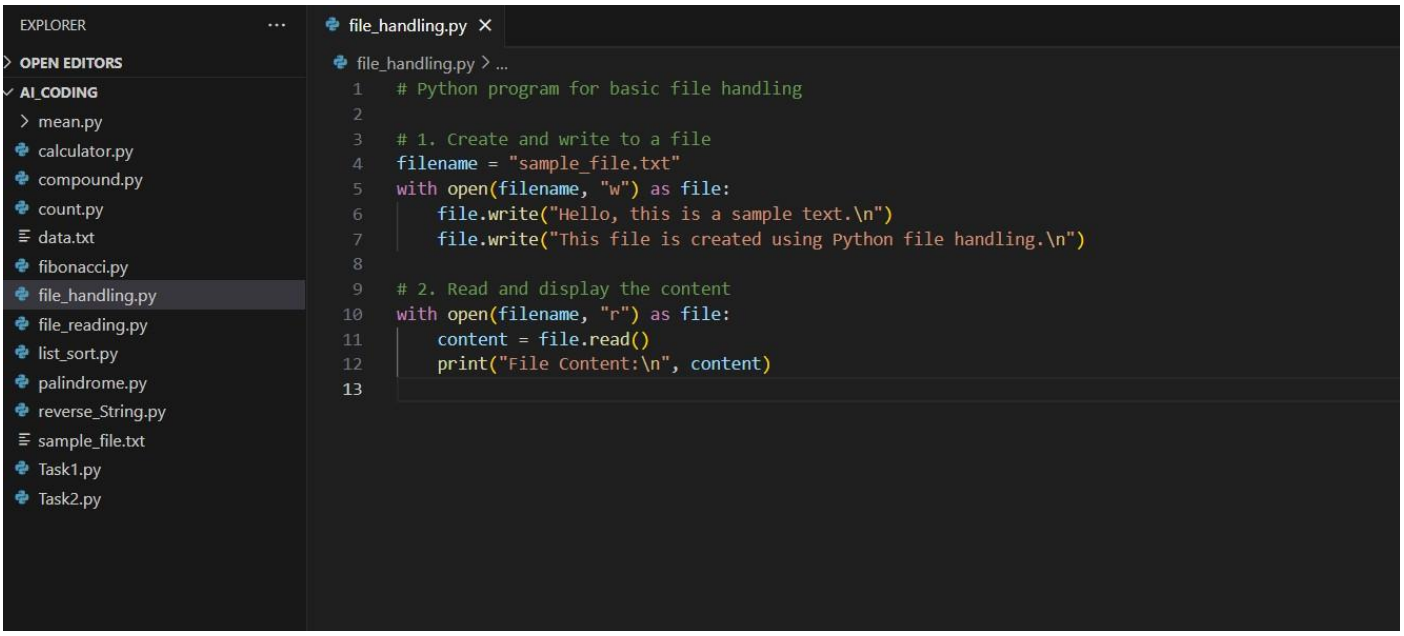
- The results are returned as a tuple and unpacked into separate variables, making the output clear and structured.

TASK #3:

Prompt Used:

Install and set up Cursor AI. Use it to generate a Python program that performs file handling:
Create a text file
Write sample text
Read and display the content

Code Generated:



Output After executing Code:

Observations:

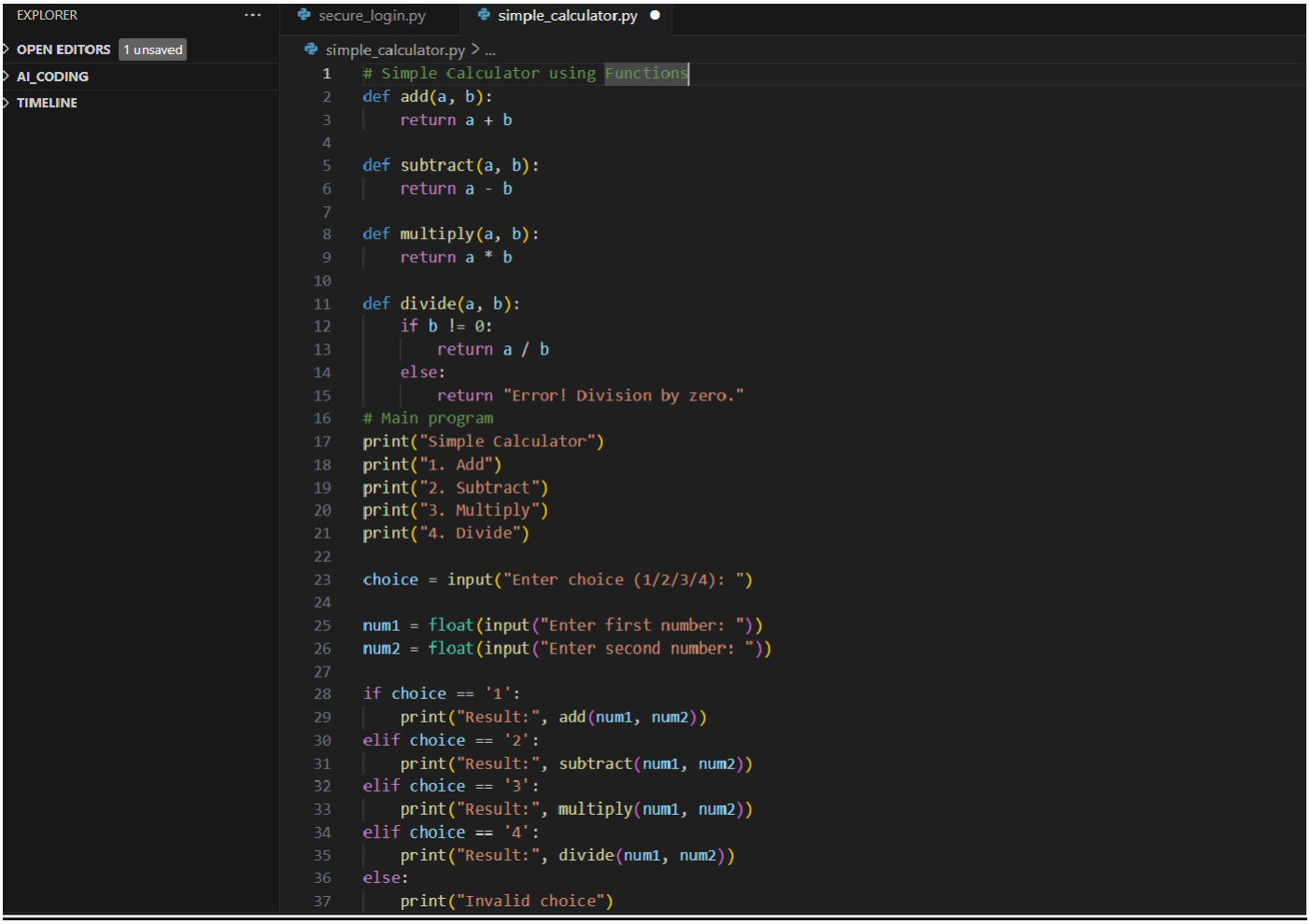
- A file named sample_file.txt is created using write ("w") mode, which overwrites the file if it already exists.
- The with open() statement is used for automatic handling of closing the file.
- Two lines of text are written into the file using write().
- The file is then opened in read ("r") mode to fetch its content.
- read() reads the entire file content at once and prints it on the console.

TASK #4:

Prompt Used:

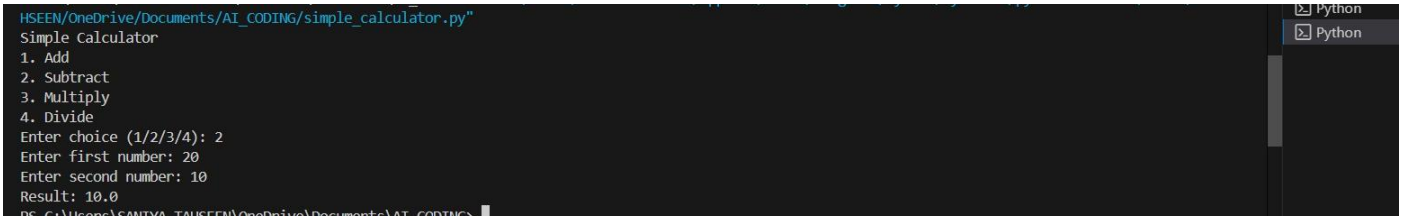
• Ask Google Gemini to generate a Python program that implements a simple calculator using functions (add, subtract, multiply, divide). Then, ask Gemini to explain how the code works.

Code Generated:



```
# Simple Calculator using Functions
def add(a, b):
    return a + b

def subtract(a, b):
    return a - b

def multiply(a, b):
    return a * b

def divide(a, b):
    if b != 0:
        return a / b
    else:
        return "Error! Division by zero."
# Main program
print("Simple Calculator")
print("1. Add")
print("2. Subtract")
print("3. Multiply")
print("4. Divide")

choice = input("Enter choice (1/2/3/4): ")

num1 = float(input("Enter first number: "))
num2 = float(input("Enter second number: "))

if choice == '1':
    print("Result:", add(num1, num2))
elif choice == '2':
    print("Result:", subtract(num1, num2))
elif choice == '3':
    print("Result:", multiply(num1, num2))
elif choice == '4':
    print("Result:", divide(num1, num2))
else:
    print("Invalid choice")
```

Output After executing Code:



```
HSEEN/OneDrive/Documents/AI_CODING/simple_calculator.py"
Simple Calculator
1. Add
2. Subtract
3. Multiply
4. Divide
Enter choice (1/2/3/4): 2
Enter first number: 20
Enter second number: 10
Result: 10.0
```

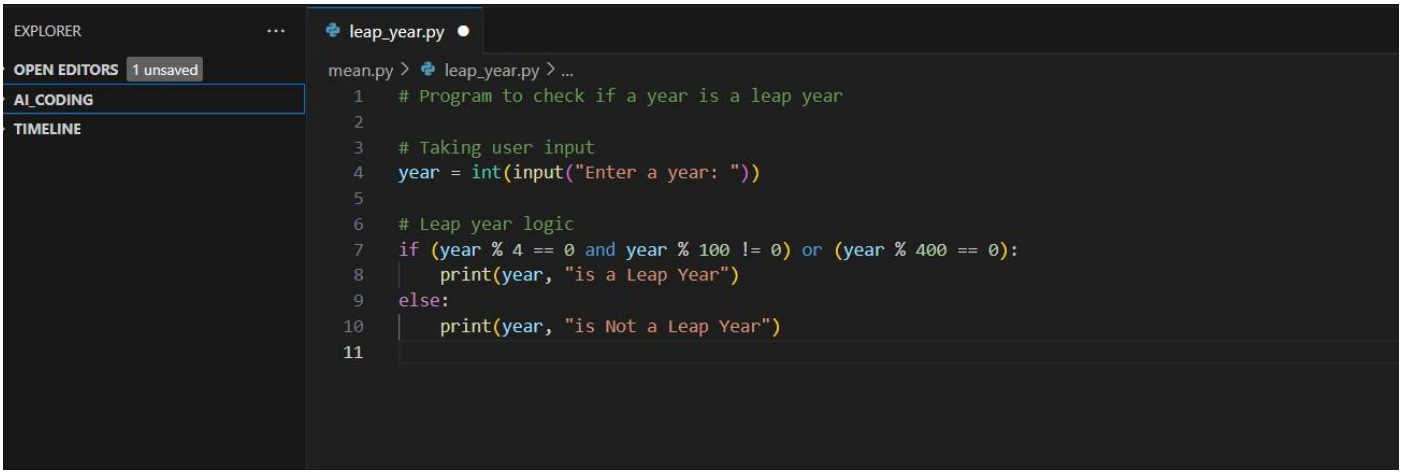
TASK #5:

Prompt Used:

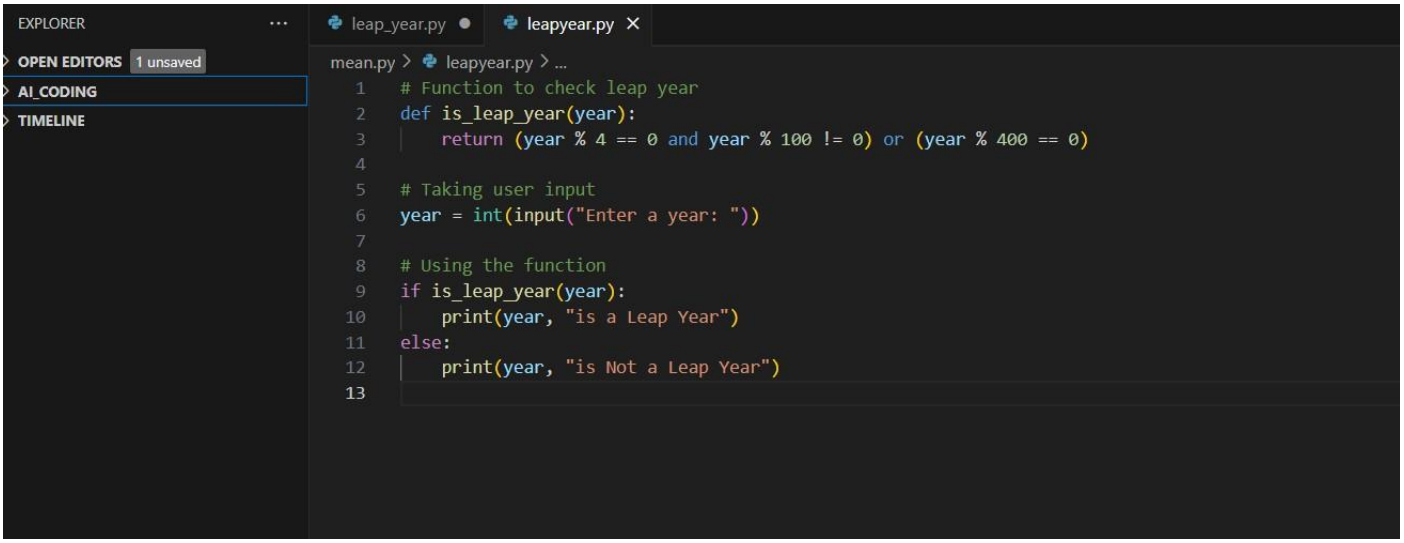
Use Cursor AI to create a Python program that checks if a given year is a leap year or not. Try different prompt styles and see how Cursor modifies its code suggestions.

Code Generated:

Prompt-1:



Prompt-2:



Output After executing Code:

Observations:

Prompt-1:

- Uses **inline if-else logic** to check leap year condition:
  (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0)
- Drawback: The logic and input/output are mixed together, making it less reusable.

Prompt-2:

- The program defines a separate function is_leap_year(year) and returns True or False Depending on condition.
- Main code only handles input and output, while the logic is isolated inside the function.